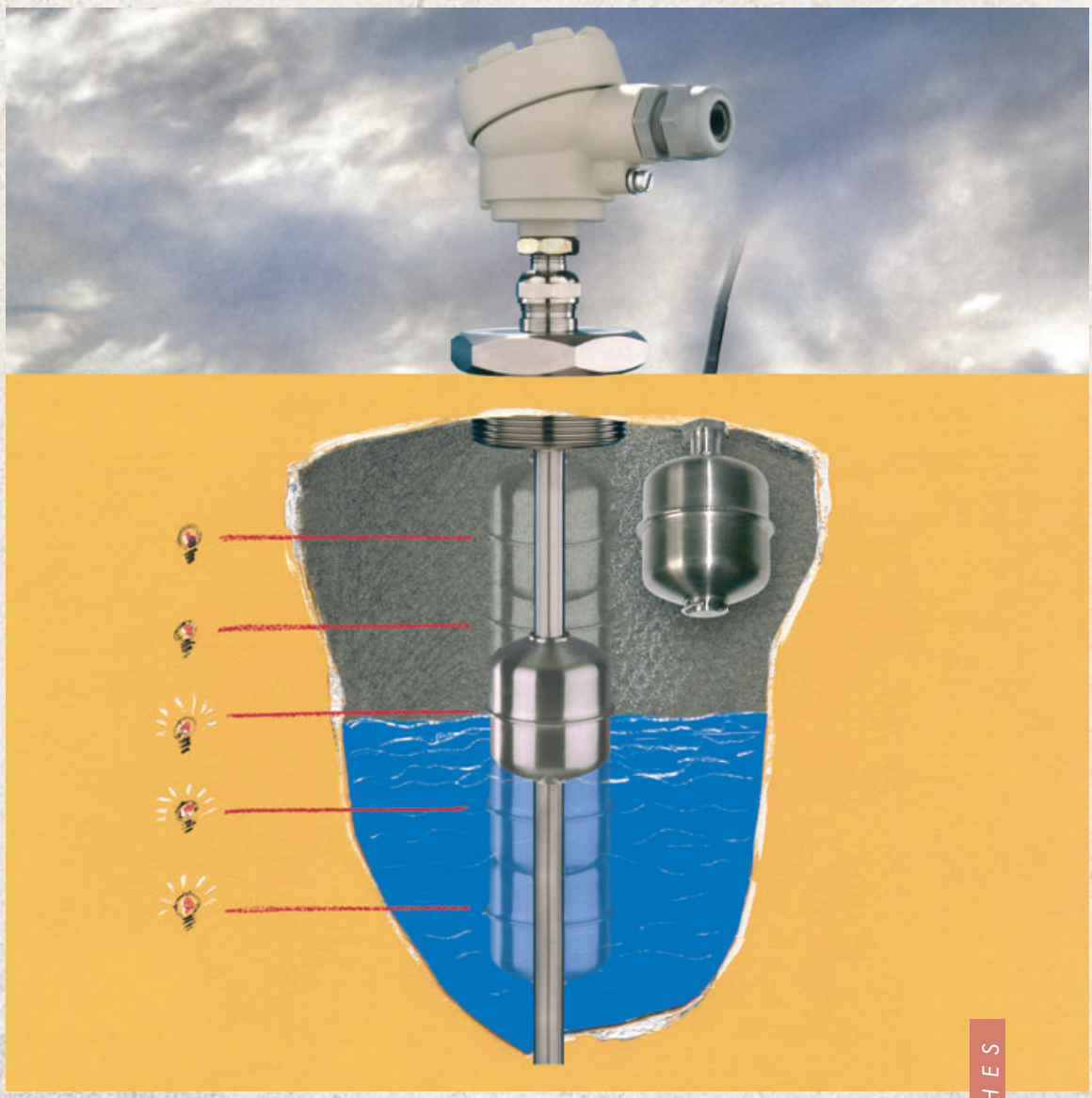
For liquids

# NIVOPOINT

## MAGNETIC FLOAT LEVEL SWITCHES



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LEVEL SWITCHES

# NIVOPOINT MAGNETIC FLOAT LEVEL SWITCHES

## MAIN FEATURES

- *Level switching without auxiliary power*
- *Maximum 5 switching points*
- *Stainless steel and plastic coated versions*
- *150 °C medium temperature*
- *Mini version*
- *Wide variety of floats*
- *ATEX version*

## APPLICATIONS

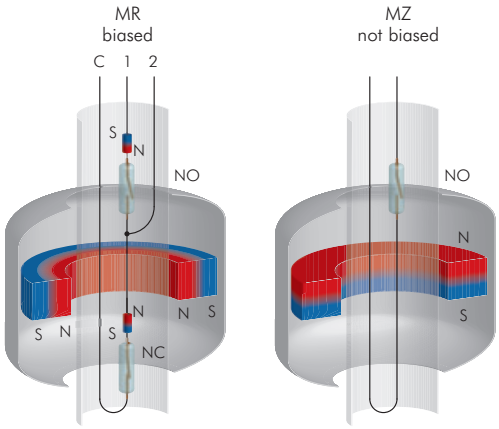
- *Multipoint level switching*
- *For controlling pumps, valves*
- *Level detection of aggressive liquids*
- *Level switching of explosive liquids*



## GENERAL DESCRIPTION

**NIVOPOINT** magnetic float level switches are suitable for level detection, level switching and one- or multipoint level controlling tasks in normal as well as in hazardous areas. The device consists of a probe tube, a float incorporating a magnet and a housing containing the connection terminals. A maximum of 5 switches can be incorporated in the probe. A sliding sleeve on the top of the probe provides for a simultaneous ±25 mm adjustment possibility of the positioning of the switches. The wetted parts of the level switch are made of stainless steel. The plastic coated versions are suitable for level detecting of aggressive liquids, and the ATEX certified versions are applicable for level switching of explosive materials. Floats and process connections can be selected according to the measured medium and the application.

The mini type **NIVOPOINT** magnetic float level switches are suitable for maximum level indication in small tanks. The small size and easy mounting of the switch allows maximum level detection in appliances or tanks using process connections made for different other purposes.



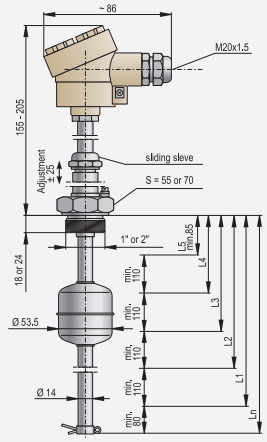
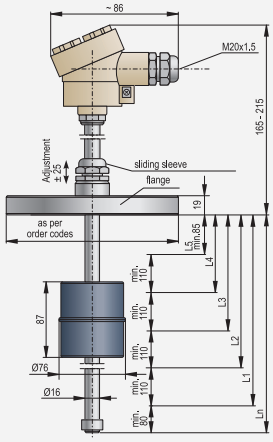
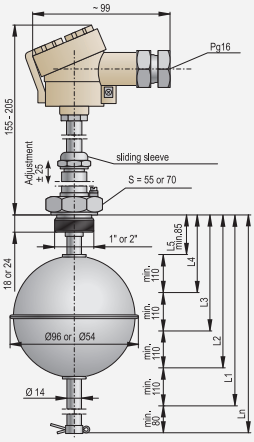
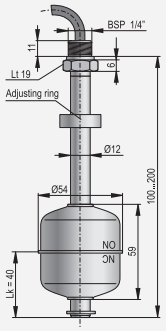
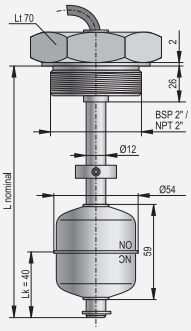

## OPERATION

**NIVOPOINT** magnetic float level switches work on the basis of the interaction of the built-in magnet in the float and the reed switches in the probe. The float of **NIVOPOINT** level switch devices moves alongside the probe tube tracking the level of the measured liquid and activating the reed switches. When the float moves ahead the reed switches, it changes the default state (NO or NC) of the reed switches, which stay in self-holding state with the help of opposite polarized magnets next to the reed switches. When the liquid level decreases, the float moves ahead the reed switches again, breaks off the self-holding state and restores the previous state of the reed switches.

The mini type **NIVOPOINT** level switches do not contain biasing magnets.

By tracking the level, the magnetic float activates the reed switch in the probe. The reed switch opens or closes according to the position of the magnetic float. The default state is meant with bottom positioned float, the normally opened or closed state of the reed switch can be changed by the inversion of the float.

## DIMENSIONS

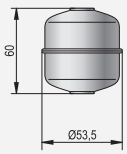
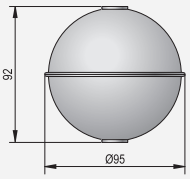
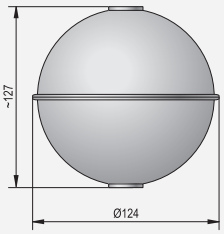
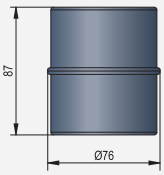
| Standard type | Plastic coated type | Ex version | Mini type | |
|---|---|---|---|---|
| | | | 1/4" BSP | 2" BSP |
|  |  |  |  |  |

## TECHNICAL DATA

| Type | Standard type | Plastic coated type | Explosion-proof type | Mini type |
|---|---|---|---|---|
| Insertion length | 0.25 m ... 3 m | | | 0.1 m ... 0.5 m |
| Material of wetted parts | 1.4404 float / 1.4571 | PVDF or PP float / PFA coated guiding tube | 1.4404 float / 1.4571 | 1.4404 float / 1.4571 |
| Max. process pressure | 2.5 MPa (25 bar) | 0.5 MPa (5 bar) | 2.5 MPa (25 bar) | |
| Min. medium density | 0.8 kg/dm$^3$ | 0.4 / 0.7 kg/dm$^3$ | 0.8 kg/dm$^3$ | 0.8 kg/dm$^3$ |
| Float sizes | see: float selection table | | | |
| Medium temperature | -40 °C...+150 °C | -40 °C...+80 °C | see: temperature data for Ex versions table | -40 °C ... +120 °C |
| Ambient temperature | -40 °C...+100 °C | | | -20 °C ... +70 °C |
| Output | 1...5 pcs reed-switches, one connecting point of each is common, NO/NC | | | 1...3 pcs reed-switches, NO or NC depending on float orientation |
| Switching rate | 120 W / VA, 250 V AC/DC, 3 A / reed relay, summary max. 9 A | | | 120 W/VA 250 V AC/DC max. 3 A |
| Switching point | see: auxiliary data of the order codes table | | | 40 mm ± 3 mm from the bottom of the protection tube |
| Switching differential | < 10 mm | | | |
| Dist. between reed-switches | Minimum 110 mm | | | |
| Electrical connection | Cable gland M 20x1.5, cable outer Ø: 6...12 mm | | Cable gland M 20x1.5, cable outer Ø: 9.5...10 mm | 0.5 m long*, 2 x 0.75 mm$^2$ cable with silicon sealing (outer Ø: 5 mm) |
| | terminal, 0.5 ... 2,5 mm$^2$ wire cross section | | | |
| Process connection | as per order code | | | |
| Gasket | Klingerit | – | Klingerit | |
| Electrical protection | Class I. | | | Class II. |
| Ingress protection | IP 65 | | | IP 68 |
| Certifications | – | | Ex II 2 G EEx d IIC T3...T6 | Bureau Veritas |
| Dimension of the housing | 116 x 80 x 65 mm | | 124 x 80 x 65 mm | – |
| Mass | 0.4 kg + 0.3 kg/fm | | 0.45 kg + 0.3 kg/fm | 0.15 kg + cable: 0.05 kg/fm |

* available to order with different cable length

## FLOAT SELECTION

| Type | MRC-105-7M-600 | MRC-105-7M-700 | MRC-105-7M-800 | MPP-105-3M-200 | MPP-105-3M-900 |
|---|---|---|---|---|---|
| | MZS-101-3M-700 (1) | | | | |
| Dimensions |   |   |   |   | |
| Standard type | ■ (2) | ■ | ■ | | |
| Plastic type | | | | ■ (2) | ■ |
| Ex type | ■ (2) | ■ | ■ | | |
| Mini type | ■ | | | | |
| Medium density (min.) | 0.8 kg/dm$^3$ | 0.55 kg/dm$^3$ | 0.4 kg/dm$^3$ | 0.7 kg/dm$^3$ | 0.4 kg/dm$^3$ |
| Material | 1.4404 | | | PVDF | PP |
| Medium pressure | 2.5 MPa (25 bar) | 1.6 MPa (16 bar) | 2.5 MPa (25 bar) | 0.6 MPa (6 bar) | 0.3 MPa (3 bar) |

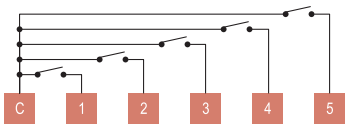
(1) Mini type (2) Standard float, can be ordered with different float as per the float selection table

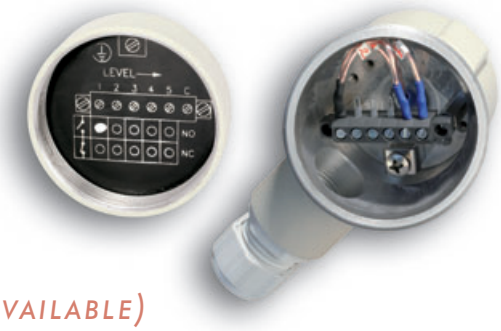
mrcls11a0604b

## TEMPERATURE DATA FOR EX VERSIONS

| Class | T6 | T5 | T4 | T3 |
|---|---|---|---|---|
| Max. ambient temperature from –20 °C | +80 °C | +95 °C | +85 °C | +70 °C |
| Max. medium temperature from –20 °C | +85 °C | +100 °C | +135 °C | +150 °C |

## WIRING




## INSTALLATION

A **NIVOPOINT** level switch equipped with Ø52 mm cylindrical float can be installed into the tank through a 2" BSP process connection. Units with larger floats need to be flanged unless a mounting of the float by accessing the interior of the tank is allowed. Mini type level switches may feature 1/4" BSP or 2" BSP connections. These level switches are to be mounted into a tank from inside and fixed with a nut from outside.

## ORDER CODES (NOT ALL COMBINATIONS AVAILABLE)

### NIVOPOINT magnetic float level switches

NIVOPOINT M□□–□□□–□

| Type | Code |
|---|---|
| Standard | R |
| Plastic | P (2) |

| Process conn. (3) | Code |
|---|---|
| 1″ BSP | A |
| 2″ BSP | C |
| 1″ NPT | D |
| 2″ NPT | G |
| DN 80 PN 16 PP / DIN | P (4) |
| DN 100 PN 16 PP / DIN | R (4) |

| Switch (5) | Code |
|---|---|
| 1 pc NO / NC | 1 |
| 2 pcs NO / NC | 2 |
| 3 pcs NO / NC | 3 |
| 4 pcs NO / NC | 4 |
| 5 pcs NO / NC | 5 |

| Code | Insertion length | | Code |
|---|---|---|---|
| 0 | 0 m | 0 m | 0 |
| 1 | 1 m | 0.1 m | 1 |
| 2 | 2 m | 0.2 m | 2 |
| 3 | 3 m | 0.3 m | 3 |
| | | 0.4 m | 4 |
| | | 0.5 m | 5 |
| | | 0.6 m | 6 |
| | | 0.7 m | 7 |
| | | 0.8 m | 8 |
| | | 0.9 m | 9 |

| Float / Ex | Code |
|---|---|
| Ø 52 (6) | 3 |
| Ø 52 / Ex (6) | 7 |

*(1) The order code of an Ex version should end in „Ex"*
*(2) Not available in Ex version*
*(3) See: flanges selection*
*(4) Only for plastic version instruments*
*(5) The order should contain the positions of the switching points and the default operation mode (NO/NC) as per filling the auxiliary data table. Special versions can be ordered with multiple, independent contacts. The limit of the terminal points is 6.*
*(6) Depends on the order: as per the float selection table*

### Floats

| Type | Diam. / Material |
|---|---|
| MRC-105-7M-600-00 | Ø 52 mm / 1.4404 |
| MRC-105-7M-700-00 | Ø 92 mm / 1.4404 |
| MRC-105-7M-800-00 | Ø 124 mm / 1.4404 |
| MPP-105-3M-200-00 | Ø 76 mm / PVDF |
| MPP-105-3M-900-00 | Ø 76 mm / PP |
| MZS-101-3M-700-00 | Ø 52 mm / 1.4404 |

### Auxiliary Data

| Switching point (3) | | Default oper. mode (4) NO | NC |
|---|---|---|---|
| L1 (1) | … mm | ☐ | ☐ |
| L2 | … mm | ☐ | ☐ |
| L3 | … mm | ☐ | ☐ |
| L4 | … mm | ☐ | ☐ |
| L5 (2) | … mm | ☐ | ☐ |

*(1) L-L1 > 80 mm, L= insertion length*
*(2) L5 > 85 mm*
*(3) Min. distance of the switching points: 110 mm.*
*(4) Default operation mode (NO/NC) is meant with bottom positioned float.*

### Flanges:

MFT–□□□–□

| Standard / Material | Code |
|---|---|
| DIN / Carbon steel | 1 |
| DIN / 1.4571 | 2 |
| ANSI / Carbon steel | 5 |
| ANSI / 1.4571 | 6 |

| Size DIN/ANSI | Code |
|---|---|
| DN 100 / 4″ | 3 |
| DN 125 / 5″ | 4 |

| Pressure DIN/ANSI | Code |
|---|---|
| PN 25 / 300 psi | 2 |

| Inner size | Code |
|---|---|
| 1″ BSP | 2 |
| 2″ BSP | 3 |
| 1″ NPT | 5 |
| 2″ NPT | 6 |

### NIVOPOINT magnetic float level switches (Mini type)

NIVOPOINT M□□–□0□–□

| Type | Code |
|---|---|
| Mini type | Z |

| Connection | Code |
|---|---|
| ¼″ BSP | S |
| 2″ BSP | C |

| Switch | Code |
|---|---|
| 1 pc NO / NC | 1 |
| 2 pcs NO / NC | 2 |
| 3 pcs NO / NC | 3 |

| Insertion length | Code |
|---|---|
| 0.1 m | 1 |
| 0.2 m | 2 |
| 0.3 m | 3 |
| 0.4 m | 4 |
| 0.5 m | 5 |

| Float | Code |
|---|---|
| Ø 52 | 3 |

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